kee, 8,199; Bismarck, 7,932; Wood's Holl, 7,392: St. Louis, 7,113; Cedar Keys, 6,875; Cairo, 5,874. The record on Mt. Washington is incomplete owing to the frost work. The *smallest* are: Atlanta, 1,669; La Messilla, 1,743; Lynchburg, 2,364; Roseburg, 2,486: Deadwod, 2,971: Springfield, Mass., 3,021; Los Angeles, 3,185; Nashville, 3,270; Little Rock, 3,958; Duluth; 4,356: Oswego, 4,368.

Local Storms.—The following account of the tornado at Savoy, Fannin Co., Tex., was received too late for the MAY REVIEW: About 10 p. m., May 28th, 1880, two large black clouds (one moving from SE. and the other from the NW.) met SW. of the town and formed one funnel-shaped cloud, causing a low rumbling sound to be heard. During the formation, vivid electrical discharges in the shape of large balls of fire, occurred. Pendent from the cloud was a long cylinder which rotated from W. to E. by the south point, and touched the earth continuously during its passage through the town. The track was about 180 yards wide, direction SW. to NE., duration about two minutes. No wind was felt outside the path. The tornado left the earth N. of the town and was not again heard of. Its passage was marked by hail and followed by heavy rain, which continued several hours. Twelve persons were killed and over sixty wounded: some fatally. Every house in the track, 48 in number, was destroyed. The sourrounding country is a rolling prairie with no native timber. St. Louis, Mo., June 4th, strong S. wind attaining, at 11 a. m., velocity of 52 miles. The storm was accompanied by thunder, lightning and heavy rain. One person was killed and several injured. Several buildings were unroofed and much damage done to others. Considerable damage was also done south of the city. Pottawattamie Co., Iowa, 10th, during p. m, terrible tornado swept through the southeastern portion of the county, destroying everything in its path, which averaged about a half mile in width. Wind clouds, of very portentous appearance, were first observed forming both in the east and west. In a short time they came together and formed a conical-shaped cloud, which rapidly extended downward to the earth, when the work of devastation commenced. At one place, a farmer's house, surrounded by a frail fence, was carried out of the yard and dashed to pieces, leaving every board of the fence remaining in its place. Twenty persons were killed outright and all buildings literally torn to pieces. The passage of the storm was almost instantaneous: no rain accompanied it. Brownsville, Mower Co., Minn., 11th, very violent wind storm causing great destruction to buildings and fences; one person killed. Sparta, Monroe Co., Wis., 11th, round house of the Chicago and Northwestern railroad blown down and several other buildings demolished. Glendale, Ohio, 14th, 8 p. m., violent wind and rain-storm, passed through the village from SW. to NE. Scarcely a dwelling remained uninjured; scores of the largest trees either uprooted or twisted off near the ground. Many of the largest buildings were torn to pieces and heavy objects carried long distances. Loss to buildings estimated at $80,000. Near Springdale, the damage was proportionately severe, 15 buildings were either badly injured or completely destroyed and several animals killed. At Evendale six buildings were wrecked and five animals killed. In the vicinity of Montgomery, several buildings destroyed, and scores of trees uprooted or twisted off. At Venice and Symmes Corner, Butler Co., the destruction was particularly severe, acres of timber were shorn of their branches, fields of grain in the shock were scattered in every direction, large orchards were completely destroyed, dwellings and out-buildings were either unroofed or entirely blown down. Between 50 and 60 buildings were badly injured or destroyed and several animals killed. The heavy iron bridge, 113 feet long, spanning Indian Creek, was whirled from its abutments. Two other heavy bridges in the vicinity were similarly destroyed. Numerous chickens and turkeys were found dead in the path of the storm, with the feathers completely stripped from their bodies. The noise accompanying the storm was described as terrible, resembling the report of a large cannon in its reverberations. In Morgan township the storm was very severe, buildings, fences and trees were damaged to the extent of about $20,000. At Miamiville, the storm left the town in ruins. The large covered bridge over the Little Miami river was swept away. Riverside, Del., 12 p. m., violent wind storm causing great damage to peach orchards, several buildings demolished. At Middletown, Del., the roof of the National Hotel was lifted and carried half a mile; many other buildings badly wrecked, and several peach orchards entirely destroyed. Shelbyville, Ind., 14th, p. m., very violent tornado, many buildings destroyed and great damage done to farm property, one person killed. The storm moved from SW. to NE.; path very narrow. New York City, 14th p. m., very heavy wind storm, many buildings unroofed and otherwise injured; storm continued for about fifteen minutes. At Paterson and Newark, N. J., buildings were damaged to the extent of $25,000.

Waterspouts.—Cape Henry, 12th, 6 p. m., three distinct waterspouts were observed at sea 200 yards from station, moving southeastward with extreme rapidity, disappearing when about two miles below station. The spiral motion in each spout was from left to right. Ft. Barrancas, Fla., 2nd, 10:10 to 10:50 a. m., four miles from shore moving slowly southeastward.

VERIFICATIONS.

Indications.—The detailed comparison of the tri-daily indications for June, with the telegraphic reports for the succeeding twenty-four hours, shows the general percentage of verifications to be 88.7 per cent. The percentages for the four elements are: Weather, 87.7; Direction of the Wind, 88.5: Temperature, 88.6; Barometer, 90.0 per cent. By geographical districts they are: for New England, 86.6; Middle States, 87.1; South Atlantic States, 92.5; Eastern Gulf States, 91.9; Western Gulf States, 92.6; Lower Lake region, 89.9; Upper Lake region, 86.0: Tennessee and the Ohio valley, 90.4; Upper Mississippi valley, 85.2; Lower Missouri valley, 83.4; Northern Pacific coast region, 77.0: Central Pacific coast region,

100.0; Southern Pacific coast region, 100.0. There were 12 omissions to predict out of 3,690, or 0.33 per cent. Of the 3,678 predictions that have been made, 82, or 2.23 per cent, are considered to have entirely failed; 99, or 2.69 per cent, were one-fourth verified; 348, or 9.46 per cent, were one-half verified; 345, or 9.38 per cent, were three-fourths verified; 2,804, or 76.24 per cent, were fully verified, so far as can be ascertained from the tri-daily reports.

Cautionary Signals.—89 Cautionary Signals were displayed during the month, of which 76, or 85.4 per cent., were justified by winds of 25 miles per hour or over at, or within a radius of 100 miles of the station. 12 Off-shore Signals were displayed, of which 88, or 66.7 per cent, were fully justified; 9, or 75.0 per cent as to direction; 10 or 83.3 per cent, as to velocity. 101 signals of both kinds were displayed, of which 84 or 83.2 per cent, were fully justified. The above does not include signals ordered for 50 display stations, where the velocity is only estimated. 117 cases of winds of 25 miles and over per hour, from scattered stations, were reported, and for which signals had not been ordered. 11 signals were ordered late.

NAVIGATION.

In the table on the right hand side of chart No. III. the highest and lowest stages of water, as recorded on the river gauges, occurring during the month of *June*, 1880, at Signal Service stations, are given, with the dates of the same. The following is a general resumé of the condition of the rivers during the month. The *Red River* at Shreveport rose slowly from 9 ft. on the 1st to 17 ft. on the 20th, and fell to 14½ ft. by the 30th. The *Arkansas* at Little Rock remained very low and almost stationary throughout the month. The *Missouri* at Yankton rose from 6 ft. on the 1st to 10 ft. on the 5th, but fell to about 4½ ft. by the 10th; on the 13th a second rise set in which continued to end of month, when the water reached 12 ft.; at Omaha it rose from 9 ft. on the 1st to 12 ft. on the 6th; fell slowly to 10½ ft. by the 13th, and afterward rose to 16 ft. 2 in. (or 2 inches above danger-line) by the 30th; at Leavenworth it rose from about 8½ ft. from 1st to 3rd, to 12 ft. on the 7th; fell to 10½ ft. on the 13th, rose to 14 ft. by the 22nd, and remained almost stationary to end. The *Mississippi* at St. Paul rose from 7 ft. on the 1st to 15 ft. 3 in. on the 17th, passing the danger-line, 14½ ft., on the 15th; from the 17th it fell slowly to 9 ft. on the 30th. At La Crosse it remained almost stationary, about 5 ft., until the 5th, when the rise set in; by the 19th the water had reached 15 ft. 2 in., after which it fell to 9 ft. 5 in. by the 30th. At Dubuque it remained almost stationary, about 9½ ft., until the 7th, when it commenced to rise slowly, and, passing the danger-line, 21 ft. 10 in., on the 21st, reached 22 ft. 8 in. on the 23rd, after which it fell to 18½ ft. by the 30th. At Davenport it remained almost stationary, about 8 ft., until the 15th, when the rise set in, and, passing the danger-line, 15 ft., on the 19th, reached 18 ft. 5 in. on the 26th. Major D. W. Flagler, U. S. Army, at Rock Island Arsenal, gives the highest water (*above low water of* 1863) at Rock Island bridge 17.15 ft. on the 26th and at Moline bridge 22.75 ft. on the 25th and 26th. He says, "This is the highest water of which there is any certain record along this portion of the Mississippi river, and it is certainly the highest water that has occurred since 1851. According to the best evidence I can obtain this high water was along the Rock Island rapids generally 1.08 feet higher than the high water of 1870." At Keokuk it remained almost stationary, about 9½ ft., until the 17th, when the rise set in, and, passing the danger-line, 14½ ft., on the 22nd, reached 18 ft. 2 in., on the 29th. At St. Louis, Cairo and Memphis it remained almost stationary throughout the month, rising slowly towards the end. At Vicksburg and New Orleans it changed but little throughout the month. The *Ohio*, at Pittsburg, remained low and almost stationary until the 13th; on the 14th, 15th and 16th, it rapidly rose to 15 ft. 11 in., after which it fell to end. At Cincinnati it remained almost stationary until the 14th, when it commenced rising and reached 24 ft. 6 in. on the 20th. At Louisville it changed but little throughout. The *Tennessee*, at Chattanooga, the *Cumberland*, at Nashville, and the *Savannah*, at Augusta, changed but little during the month. The high water in the Upper Mississippi during the latter half of the month resulted in immense damage to property along the banks, which will be found in detail under the head of *Floods*.

Icebergs.—In view of the remarkable number of icebergs and extensive fields of ice which have been reported off the banks of Newfoundland, the following table has been compiled from such marine reports as have fallen under the notice of this office. The quantity of ice reported has been greater than that of any year since 1875. In this connection, the following meterological notes are of interest: *Maritime Register*, June 9th.—"The past winter in southern Greenland has been very severe and the spring very stormy." *London Times*, June——. The winter of 1879-80 in Iceland, very mild, pressure low; early and enormous discharges of polar icefields and icebergs since March, 1880. Large iceberg reported by steamer *Nederland*, June 21st in 40° 12′ N., 44° 18′ W., is probably one of the most southerly ever reported in that longitude.

YEAR 1880.	Extreme limits of ice field.						Total number estimated as per schedule	Dimensions of large bergs.			
	East side.		South side.		West side.			Height.		Length.	
MONTH.	Date.	W. long.	Date.	N. lat.	Date.	W. long.	Number.	Extreme.	Mean.	Extreme.	Mean.
								Feet.	Feet.	Feet.	Feet.
February	20	47° 00′	23	44° 00′	23	49° 10′	25	300	125	500	240
March	16	46° 00′	22	42° 30′	24	49° 36′	133	120	67	.....	.....
April	30	45° 36′	27	42° 50′	2	50° 00′	87	300	.....	.....	.....
May	18	45° 16′	21	40° 35′	31	54° 00′	779	300	130	15,840	2 800
June	2	44° 00′	21	40° 12′	21	55° 25′	491	400	215	2,640	1,300